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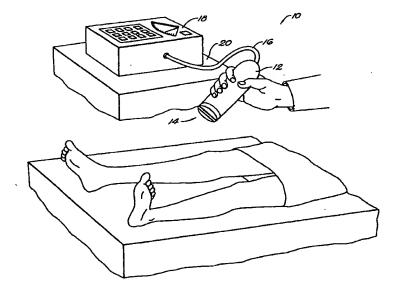
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(88) Date of publication of the international search report: 30 September 1999 (30.09.99)

(54) Title: HAIR FOLLICLE DEVITALIZATION BY INDUCED HEATING OF MAGNETICALLY SUSCEPTIBLE PARTICLES



(57) Abstract

Apparatus, methods, materials and systems for devitalizing hair follicles are disclosed in which magnetically susceptible particles are applied to a skin segment in a manner whereby the particles are deposited within the hair follicles and then subjected to a varying magnetic field to induce localized heating in the proximity of the particle, thereby devitalizing at least one component of the hair follicle to inhibit further hair growth.

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INTERNATIONAL SEARCH REPORT

Internr nat Application No PCT/US 99/02166

| A CLASSIF IPC 6 | FICATION OF SUBJECT MATTER A61N1/40 | | · |
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| Documentat | tion searched other than minimum documentation to the extent that so | oh documents are included in the fields sea | Relevant to claim No. 1-6,35, 38,40,71 7,8,39 1,35,71 7,8,39 1,35,71 7,8,39 in the international filing date filict with the application but giple or theory underlying the common to cannot be considered to enthe document is taken alone moe; the claimed invention over an inventive step when the common the control of the claimed invention |
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| C. DOCUM | ENTS CONSIDERED TO BE RELEVANT | | |
| Category * | | vant passages | Relevant to claim No. |
| Х | 5 December 1990 (1990-12-05) column 10, line 5 - line 20 column 11, line 32 - line 37 | aim 1 | |
| | column 15, 11ne 4 - 11ne 25; Cra column 20, line 6 - line 41; fig 26,27 | gures | 7 9 20 |
| Y | | • | 7,0,39 |
| х | FR 2 634 129 A (GRUP JUNE SCP) 19 January 1990 (1990-01-19) page 5, line 30 - page 6, line 3 | 23; figure | 1,35,71 |
| Y | | -/- - | 7,8,39 |
| | | | |
| X Furt | her documents are listed in the continuation of box C. | X Patent family members are listed i | n annex. |
| "A" docume consider "E" eartier of filing of "L" docume which citatio. "O" docume other of | ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another in or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but | "T" later document published after the interest or priority date and not in conflict with cited to understand the principle or the invention of the considered novel or cannot be considered novel or cannot involve an inventive step when the document of particular relevance; the cannot be considered to involve an invention of the considered to involve an involvement is combined with one or ments, such combination being obvious in the art. "&" document member of the same patent: | the application but sery underlying the laimed invention be considered to current is taken alone laimed invention rentive step when the tre other such docurs to a person skilled |
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| | mailing address of the ISA European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 | Authorized officer Petter, E | |

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INTERNATIONAL SEARCH REPORT

International Application No
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| | tion) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| ategory * | Citation of document, with stitutement, writers appropriate, or the restriction programment, with stitutement, with stit | |
| (| WO 87 03798 A (MIRELL STUART G) 2 July 1987 (1987-07-02) | 1,35,71 |
| A | page 8, line 20 - line 27; figure 1 | 17 |
| A | US 5 197 940 A (SIEVERT CHESTER E ET AL) 30 March 1993 (1993-03-30) column 6, line 6 - line 12 column 9, line 4 - line 11 column 10, line 31 - line 61; figures 5,6 | 1,20,35, 40,71 |
| A | EP 0 756 879 A (FRANCONI CAFIERO) 5 February 1997 (1997-02-05) abstract | 18,76 |
| A | US 5 569 237 A (BECKENSTEIN MICHAEL S) 29 October 1996 (1996-10-29) | 36 |
| | abstract | |
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International application No. PCT/US 99/02166

INTERNATIONAL SEARCH REPORT

| Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet) |
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| This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons: |
| 1. X Claims Nos.: 21-34 because they relate to subject matter not required to be searched by this Authority, namely: Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy |
| Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically: |
| Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a). |
| Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet) |
| This International Searching Authority found multiple inventions in this international application, as follows: |
| As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims. |
| 2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. |
| 3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: |
| No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-20,35-40,71,76 |
| Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees. |

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-20, 35-40, 71, 76

An improved magnetic field generator adapted to engage a region of ${\ensuremath{\mathsf{skin}}}$

2. Claims: 41-70, 72-75

A composition comprising magnetic particles sufficiently small to penetrate the skin as well as means for handling the particles

INTERNATIONAL SEARCH REPORT

rmation on patent family members

PC:, US 99/02166

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|---|--|
| EP 0400940 A | 05-12-1990 | US 5099756 A AU 643212 B AU 5608390 A CA 2017816 A.C JP 3094772 A | 31-03-1992 11-11-1993 06-12-1990 01-12-1990 19-04-1991 |
| FR 2634129 A | 19-01-1990 | NONE | |
| WO 8703798 A | 02-07-1987 | US 4690130 A EP 0252118 A | 01-09-1987 13-01-1988 |
| US 5197940 A | 30-03-1993 | CA 2132730 A WO 9412101 A AU 3230593 A EP 0632708 A | 09-06-1994 09-06-1994 22-06-1994 11-01-1994 |
| EP 0756879 A | 05-02-1997 | IT RM950532 A | 31-01-1997 |
| US 5569237 A | 29-10-1996 | NONE | - · |